

HAVE SHORT-TERM EFFECTS OF ENVIRONMENTAL EXPOSURE ON PNEUMONIA MORTALITY BEEN UNDER-ESTIMATED BECAUSE HOSPITALISATION IS IGNORED?

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Background & Aims: Short-term associations have been demonstrated between air pollution and respiratory mortality including pneumonia. Studies typically assume exposure depends only on place of residence, yet many are in hospital prior to death. This study explores lag length and test the hypothesis that the effect of 'black smoke' is greater when restricted to pneumonia deaths in the community - Community Acquired Pneumonia (CAP).

Methods: A case-crossover design using conditional logistic regression estimated the daily percent increase in risk for pneumonia mortality in relation to 'black smoke' in the previous 30 days. Cases were pneumonia deaths in Edinburgh 1981-1996. Multiple 'control' periods, were defined using the same weekdays for the same month as the case death. Lag structure was investigated by stratified lag model with five 6-day periods and by distributed lag models. Hospital admissions data, defined a CAP death as being someone who had not been in hospital in the 30 days before.

Results: Of 14,346 subjects who died from Pneumonia, 7,536 were CAP subjects. Larger estimated increases in risks were seen in the CAP group for all lag periods. Both stratified and distributed lag methods suggested positive effect estimates for 18 days and negative thereafter; the average percent increase per day across the 18 days was 0.70% (95% C.I. 0.29-1.14) for CAP subjects and 0.30% (95% C.I. 0.03-0.59) for all subjects.

Conclusion: Studies which fail to adjust for hospitalised subjects may underestimate exposure effects as stronger pollution effects on mortality were evident in community based subjects